

REMARKS

Applicant thanks the Examiner for the thorough examination of the application. This paper is filed in response to the Office Action dated December 19, 2006.

Present Status of the Application

Claims 1-2 and 6-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Boher et al. in view of the skill level of one of ordinary skill in the art.

Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Boher et al. and further in view of Takamatsu et al. 2001/0008803 and skill level of one of ordinary skill in the art.

Rejections Under 35 U.S.C. 103(a) of Claims 1-2 and 6-7

Claims 1-2 and 6-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Boher et al. in view of the skill level of one of ordinary skill in the art.

In making this rejection, the examiner makes reference to the skill level of one of ordinary person in the art on pages 3, 5, 7, 8 and 9 of the office action. However, nowhere in the office action does the examiner define what the skill level of one of ordinary person in the art is in relation to the patent application. According to 37 CFR 1.104(d)(2), when a rejection is based on an examiner's personal knowledge, the data must be as specific as possible and must be supported, and when requested put into affidavit format. The applicant respectfully traverses the examiner's rejection based on the examiner's failure to set forth specific and supported data as to the skill level of one of ordinary person in the art and hereby requests that any and all factual assertions be placed in affidavit format.

Further on page 5 of the office action, the examiner asserts that “Boher does not specifically teaches a database further comprising critical hydrogen content limits...allowing determination of whether a measured hydrogen content value exceeds a critical hydrogen content limit. However, Boher teaches at col. 6, lines 14-29, col. 7, lines 1-10, col. 11, lines 46-51, col. 8, line 64 to col. 9, line 18, having memory to store process data, such as adjustment data, target data, measuring the thickness and hydrogen content, determining laser beam from a look-up table, lowering the laser beam energy to prevent the hydrogen explosion when hydrogen content reach the critical limit and firing the laser beam accordingly, etc. Hence, it would have been obvious to one of ordinary skill in the art...**to recognize that Boher references teachings of stored process data, adjustment data, target data, measuring the thickness and hydrogen contents, determining laser beam energy from a look-up table, lowering the laser beam energy to prevent the hydrogen explosion when hydrogen content reach the critical limit and firing the laser beam accordingly is equivalent to a database comprising critical hydrogen content limits and appropriate beam energy levels for substrates of different thickness, allowing determination of whether a measured hydrogen content value exceeds a critical hydrogen content limit or just simply includes the critical data etc. in the look up table or adjustment data or target data, etc.”** (emphasis added).

Applicant respectfully disagrees with this assertion.

Claim 1 recites:

1. A system of automatic beam energy control, comprising:
 - a substrate holding apparatus, holding a substrate;
 - a measurement apparatus, measuring thickness and hydrogen content of the substrate; and
 - a *comparing apparatus*, providing a database further *comprising critical hydrogen content*

limits and appropriate beam energy levels for substrates of different thicknesses,
allowing determination of *whether a measured hydrogen content value exceeds a critical hydrogen content limit, providing an appropriate beam energy level accordingly;* and

a energy beam apparatus, delivering beam energy to the substrate accordingly.

(Emphasis Added)

It is clear that the system of automatic beam energy control of claim 1 comprises a *comparing apparatus*, providing a database further *comprising critical hydrogen content limits and appropriate beam energy levels for substrates of different thicknesses, allowing determination of whether a measured hydrogen content value exceeds a critical hydrogen content limit, providing an appropriate beam energy level accordingly.* (Emphasis added)

As disclosed by Boher in Col. 12, lines 10-29:

In its complete version, the method can be defined as follows:

- a) performing an ellipsometry measurement on each zone to be treated on a panel immobilized in an initial position, before said laser surface treatment, in order to obtain a multiplet of physico-chemical characteristics of the surface to be treated on each zone,
- b) *evaluating the mean energy of the laser necessary for the mean surface treatment of the panel, as a function of the characteristics obtained at step a and a look-up table stored to memory; and next, for each zone to be treated:*
- c) effecting a new ellipsometry measurement on the zone...,
- d) adjusting the energy of the laser needed for the surface treatment of the zone, as a function of the mean energy evaluated at step b, the position adjustment effected at step c

and the look-up table, and

- e) effecting a laser firing with an energy determined at step d in order to treat the zone.

As disclosed by Boher in Col. 8, lines 48-59:

The abrupt release of hydrogen during the fusion/crystallization process generally leads to a veritable explosion of the layer and/or to an increased final surface roughness, which is completely incompatible with the desired performance.

In this case, one solution consists of effecting a treatment in two steps. *First of all, a low-energy impact laser is first applied so as to release the hydrogen without fusion, even partial, of the layer of amorphous silicon.* Next, the recrystallization process is effected during a second laser impact of higher power than the first its power is to be adjusted having regard to the effects of the first laser impact).

It is clear that Boher teaches using GES1, GES2 to adjust data, target data, to determine laser beam energy from a look-up table, and additionally suggesting applying a low-energy impact laser when having a veritable explosion. However, unlike what the Examiner asserts, storing process data, such as adjustment data, target data, measuring the thickness and hydrogen content, determine laser beam from a look-up table and lowering the laser beam energy to prevent the hydrogen explosion when hydrogen content reach the critical limit and firing the laser beam accordingly are different cases and issues than in Boher. In Boher, determining laser beam energy from a look-up table and lowering the laser beam energy to prevent the hydrogen explosion when hydrogen content reaches the critical limit is not combined. Since they are different cases and issues, people in the art would just determine laser beam energy from a look-up table in the first case, but lowering the laser beam energy to prevent the hydrogen explosion when hydrogen content reaches the critical limit in the second case. The motivation to combine the two cases to achieve “comparing apparatus, providing a database further comprising

critical hydrogen content limits and appropriate beam energy levels for substances of different thicknesses, allowing determination of whether a measured hydrogen content value exceeds a critical hydrogen content limit, providing an appropriate beam energy level accordingly” in claim 1 is not suggested. Indeed, the comparing apparatus providing a database further comprising critical hydrogen content limits is not disclosed in Boher. Applicant submits that claim 1 is allowable over the cited references.

Hence it is believed that Claim 1 is allowable over the cited references. Insofar as claims 2 and 6-7 depend from Claim 1, Applicant believes that these claims are also allowable at least by virtue of their dependency.

Rejections Under 35 U.S.C. 103(a) of Claim 3

Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Boher et al. and further in view of Takamatsu et al. 2001/0008803 and skill level of one skill in the art.

Applicant submits that the office action fails to establish a *prima facie* case of obviousness in that it does not establish suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art to combine the reference teachings.

MPEP 2143 reads in part:

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, **there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings.** Second, there must be a reasonable

expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991)(Emphasis added).

In connection with the first criteria, courts have held:

The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art suggests the desirability of the combination. *In re Mills*, 916 F.2d 680, 16 USPQ 2d 1430 (Fed. Cir. 1990).

On page 7 of the office action, the suggestion or motivation for combining Boher with Takamatsu is stated as follows:

"It would have been obvious to one of ordinary skill in the art at the time the invention was made..., ***because alarm or beeping sound from computer can alert operator about the hydrogen upper limit so that operation can make safety precautions***".

Because Boher does not teach comparing apparatus providing a database further comprising critical hydrogen content limits, Boher contains no suggestion for installing an alarm system such as beeping sound from computer to alarm the operator. As there is no suggestion or motivation in either reference cited by the Examiner to modify the reference, Applicant submits that the first criteria for establishing a *prima facie* case of obviousness has not been met.

In re Fritch, 972 F. 2d 1260, 1266, 23 USPQ2d 1780 (Fed. Cir. 1992), the Federal Circuit stated:

It is impermissible to use the claimed invention as an instruction manual or "template" to piece together the teachings of the prior so that the claimed invention is rendered

obvious. *In re Gorman*, 933 F.2d 982, 987, 18 USPQ2d 1885, 1888 (Fed. Cir. 1991).

This court has previously stated that “[o]ne cannot hindsight reconstruction to pick and choose among isolated disclosures in the prior art to deprecate the claimed invention.” (*quoting in re Fine*, 837 F.2d at 1075, 5 USPQ2d at 1600).

It is Applicant’s belief that the present rejection fits the Federal Circuit’s description of an impermissible rejection under 103(a). The office action simply states certain elements of the present invention and then locates Boher and Takamatsu without pointing to anything in the prior art that suggests the desirability of the combination. Indeed, the only statement of the desirability for the comparing apparatus to issue a warning or alarm when hydrogen content exceeds a critical hydrogen content limit as recited in claim 3 comes from applicant’s own disclosure.

For at least these reasons, Applicant submits that the rejection of claim 3 should be withdrawn.

Conclusion

The Applicant believes and respectfully requests that the application is now in condition for allowance.

The Commissioner is authorized to charge any additional fees which may be required or credit overpayment to deposit account no. 12-0415. In particular, if this response is not timely filed, the Commissioner is authorized to treat this response as including a petition to extend the time period pursuant to 37 CFR 1.136(a) requesting an extension of time of the number of months necessary to make this response timely filed and the petition fee due in connection therewith may be charged to deposit account no. 12-0415.

I hereby certify that this correspondence is being deposited with the United States Post Service with sufficient postage as first class mail in an envelope addressed to: Mail Stop Amendment, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on

3-19-07

(Date of Deposit Transmission)

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3-19-07

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Respectfully submitted,



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